

those hinge pins which require a spacing washer between links with one spacing washer integral or fixed on the pin, thereby to provide a stabilizing factor or agency at the pivots, preventing side

5 play and wobbling.

It will be observed that stresses incident to the weight and movement of the panel are transmitted through the relatively long base member 26 to the inner portion of the frame; and that no appreciable stress is imposed on the rabbet flange

10 22, 24 nor on the surrounding plaster.

Under certain conditions it may be desirable or necessary to employ removable closures instead of the hinged closures heretofore described. For

15 such a case I provide a cam-slip type of panel securing and controlling means, such as is illustrated in Figure 14.

Usual clips, dowels, hooks, etc., which have been considered satisfactory for prior frame constructions are inadequate and impracticable for use with my improved frames. Such devices logically are located at the bottom of the closure element in order that the panel may be removed and replaced with greater ease and safety than otherwise. But the rim member of my frame is too delicate to carry the load of a heavy panel without yielding. It is therefore imperative that the finish-frame and the contiguous plaster be entirely relieved of the weight of the panel, and be

20 free from distorting stresses during its movements.

The present invention makes use of pairs of concentric clips (Figure 14) whose arcs are struck from an imaginary center 81 so placed that the panel will clear as it leaves and re-enters its housing, and so that the bottom of the door will be drawn well into its rebate for close seating. It is also an advantage to work out the center of curvature of the clips so that the upper and

40 lower clips can be made identical. These clips deliver all weight to the sub-frame and relieve the finish wall.

One element 80 of the clip is secured interiorly to the sub-frame structure and reaches out toward the closure seat. The other element 82 of the clip is secured to the inner face of the closure element and reaches in toward the element 80. Each of the elements 80, 82 has its reaching portion arcuate in form, and the element 82 is adapted to ride over element 80 when removing or

50 inserting the closure.

Although these clips are particularly well adapted for use with my improved frames, they will be found useful and advantageous in connection with other types of frame.

It should be noted that my frame construction provides a continuous seat on all four sides of the panel or door; and that neither the hinges nor the clips require any cutting or interruption of this seat. When an effective cam lock or catch is used on one jamb and the present hinges or clips are used on the opposite jamb, the result should be a practically airtight or gas-tight installation. When it is realized that every point of air leakage in a vertical wall will in time occasion discoloration of the wall the importance of tight and complete seating becomes apparent.

The hinges can be applied to the frame with tap screws so that the door and hinges can be removed if required. This is a reason for not burying the hinges in the wall construction, inaccessible in emergency. The hinge also avoids the piercing or cutting and weakening of the frame. In addition, my hinge obviates the necessity of "boxing-in" or segregating the moving hinge from the

5 wall construction; inter-action here would be mutually destructive. In my improved frame construction and in other thin, plate-type door frame designs it is obvious that any box to enclose the hinge must lie too close to the face of the wall to be structurally sound.

Figure 14 illustrates also a plaster inter-lock whereby any tendency of the plaster to crack or pull away from the frame may be effectively counteracted. The part 84 preferably is of a readily bendable metal whereby the part 86 may be adjusted for different thicknesses of plaster.

Although my improved hinge has been described principally in its application to wall panels, it may be employed for cabinet doors, and even for doors of buildings. Figures 12 and 13 illustrate such an embodiment in which the hinge base member 62 secured to the casing 64 may be the same as those heretofore described. The other base member will be in two parts 66, 68, each secured to the door 69 adjacent to a cut-out 70 therein, as seen in Figure 13. All of the links 38' extend between these two members 66, 68. The action of this hinge is the same as for the panel hinges.

I claim as my invention:

1. A hinge for an openable closure element for a wall opening, comprising a pair of links, each reaching to the closure element from a stationary interior wall of the opening; said links being mid-pivoted together, and each having a terminal fixed pivotal connection and a terminal sliding pivoted connection, one of which connections, of each link, is to the said interior wall of the opening and the other of which is to the said closure element; and a pair of cams, one fixed on said interior wall, for controlling the travel of the terminal sliding pivotal connection of one said link, and the other fixed on said closure element, for controlling the travel of the terminal sliding pivotal connection of the other said link; said cams having each a cam slot, and the said slots having curved terminal portions in which the said sliding pivotal connections respectively and simultaneously travel during initial opening movement of the closure element, the curvatures of said terminal portions of slots being in directions respectively away from, and toward the planes of said interior wall and said closure element.

2. A hinge for an openable closure element closely confined at its edges within a wall opening, comprising a pair of approximately L-shaped links, each reaching to the closure element from a stationary interior wall of the opening; said links having the junctures of their L-arms mid-pivoted together, and each having a fixed pivotal connection at one L-arm terminal and a sliding pivotal connection at the other L-arm terminal, one of which terminal connections, of each link, is to said interior wall of the opening; and a pair of cams, one fixed on said interior wall, for controlling the travel of the terminal sliding pivotal connection of one said link, and the other fixed on said closure element, for controlling the travel of the terminal sliding pivotal connection of the other said link; said cams having each a cam slot whose extremities are curved in diverse directions relative to the plane of the support on which the particular cam is mounted, and said cam slots being arranged on their respective supports with their said curvatures coordinated for the said sliding pivotal connections to travel simultaneously in diverse directions relative to the